

CLAIMS

1 In the process for the lost foam casting of aluminum comprising the principle step of forming a pattern from a polymeric foam, depositing a refractory coating on the surface of said pattern, embedding said pattern in a bed of sand that forms a mold about said pattern, pouring molten 5 aluminum into said mold to vaporize and displace said pattern, replicate said pattern with said aluminum and coat said aluminum with said coating, allowing said aluminum to solidify into a casting, and removing said sand from said casting, the improvement comprising said coating comprising a sufficient amount of a thermally stable, water insoluble, acid-gasifiable 10 compound to rupture said coating upon gasification, and wetting said coating with an acid to dissociate and gasify said compound and rupture said coating.

2. The process according to claim 1 wherein said gasifiable compound is selected from the group consisting of alkaline earth carbonates.

3. The process according to claim 2 wherein said alkaline earth carbonate is calcium carbonate.

4. The process according to claim 3 wherein said calcium carbonate has an average particle size less than about 5 microns.

5. The process according to claim 3 wherein said calcium carbonate comprises at least about 10% by weight of said coating.

6. The process according to claim 1 wherein, while hot, said casting is quenched in an acidic aqueous quenchant.

7. The process according to claim 1 including the step of neutralizing any thermal degradation products of said foam left in said refractory coating to enhance said wetting.

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8. The process according to claim 7 including adding a surfactant to said acid to effect said neutralizing.

9. The process according to claim 7 including the step of heating said casting sufficiently to remove said thermal degradation product to effect said neutralizing.

10. A process for the lost foam casting of aluminum comprising the steps of:

(1) forming a pattern from a polymeric foam;

(2) depositing refractory coating comprising a thermally stable,

5 acid-gasifiable, water-insoluble compound on the surface of said pattern;

(3) embedding said pattern in a bed of sand that forms a mold about said pattern;

(4) pouring molten aluminum into said mold to vaporize and displace said pattern, replicate said pattern with said aluminum, coat and

10 infuse said coating with hydrophobic thermal degradation products of said foam;

(5) allowing said aluminum to solidify into a casting;

(6) removing said sand from said casting;

(7) heating said casting for a time and at a temperature

15 sufficient to remove said hydrophobic breakdown products from said coating; and

(8) contacting said coating with an acid to dissociate and gasify said compound and rupture said coating.

11. The process according to claim 10 wherein said foam comprises polystyrene and said temperature is at least about 450°C.

12. The process according to claim 10 wherein said acid-gasifiable compound comprises an alkaline earth carbonate.

13. The process according to claim 12 wherein said compound comprises calcium carbonate.